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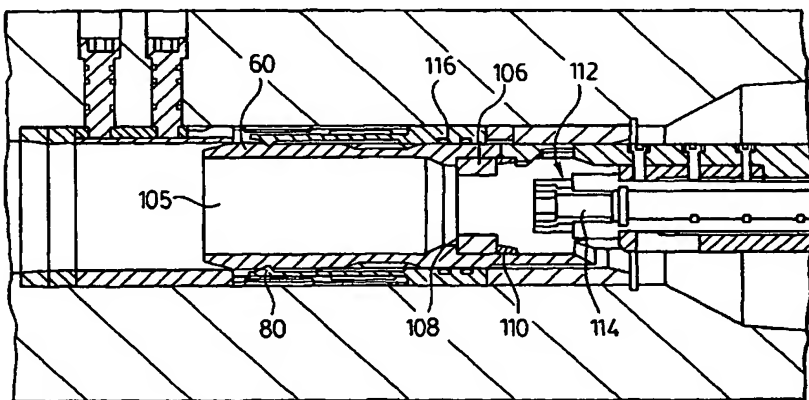
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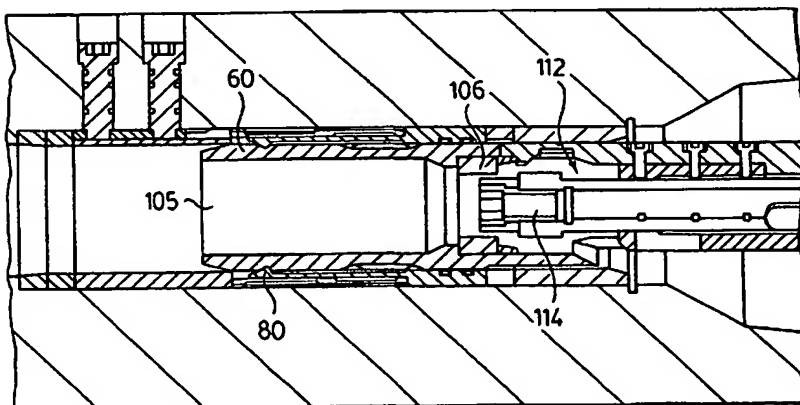
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[Continued on next page]

(54) Title: MUD PULSE LANDING ASSEMBLY FOR USE IN DIRECTIONAL DRILLING



A



B

(57) Abstract: A mud pulse landing assembly (10) which allows for the removal of the mud pulse generator (16) containing the mud pulse orifice (106), thus creating an unobstructed passageway for any tool or instrumentation that may need to be passed through the drill string. The retainer (14) of the mud pulse landing assembly also provides a universal mount for engaging alternate tools or instrumentation for use in analyzing the borehole geology. The retainer (14) is positioned between the mud pulse generator (16) and the landing sub body, so as to protect the retainer from the turbulent and abrasive mud flow, and to prevent obstruction of the area downstream of the compact muleshoe (60).



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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PCT/CA 03/01593

A. CLASSIFICATION OF SUBJECT MATTER		
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B. FIELDS SEARCHED		
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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 196 27 719 A (BECFIELD DRILLING SERVICES GMB) 15 January 1998 (1998-01-15) column 4, line 50-61	1,2,4-8, 15
Y	column 6, line 13-37; figures 1-3	12,13
X	DE 100 59 860 C (BECFIELD DRILLING SERVICES GMB) 6 June 2002 (2002-06-06) paragraphs '0003!', '0006!', '0007!', '0017!'; figures 1,2	1
Y	US 4 120 097 A (JETER JOHN DOISE) 17 October 1978 (1978-10-17) column 4, line 12-59 column 6, line 9-30; figures 1-9	12,13
A	US 4 699 352 A (MUMBY EDWARD S) 13 October 1987 (1987-10-13) figure 2	12,13
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer van Berlo, A

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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